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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,554	12/21/2001	Michael E. Dobbs	0029-0002	3628

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HARRITY & SNYDER, LLP
11240 WAPLES MILL ROAD
SUITE 300
FAIRFAX, VA 22030

EXAMINER

CONNOLLY, PATRICK J

ART UNIT PAPER NUMBER

2877

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/024,554

Applicant(s)

DOBBS, MICHAEL E.

Examiner

Patrick J Connolly

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 8, 9, 10, 18, 20 and 22-24 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent No. 4,413,905 to Holzapfel.

As to claims 1, 10 and 20 Holzapfel discloses a method and apparatus for measuring length in an interferometer including (see figure 2):

a radiant source for generating radiation having a known wavelength profile (1);

an optical amplifier for amplifying the radiation to produce amplified radiation (13);

at least two optical elements configured for producing an interference pattern (15, 4, 16, etc.);

a detector for detecting and measuring the interference pattern (19, 39);

a processor configured to measure one or more lengths from the data (23).

As to claim 2, Holzapfel discloses a source of coherent radiation (1).

As to claims 8, 18, 22 and 24, Holzapfel discloses that the amplifiers create a second harmonic generation effect, which while doubling the frequency of the beam will also half the wavelength (see column 6, lines 39-50).

As to claim 9 and 23, Holzapfel discloses calculating length by interpolating between zero crossings of the interference pattern (see lines 48-56).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-7, 11-17, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,413,905 to Holzapfel.

As to claim 3 and 13, while Holzapfel does not teach a noncoherent light source, these are notoriously well known light sources in the art and it would have been obvious to one of ordinary skill in the art at the time of invention to include such a light source and a lens with which to focus it in the distance measuring interferometer of Holzapfel.

As to claim 4 and 13, Holzapfel teaches filtering the light source (see Figure 3, 12).

As to claim 5, while Holzapfel does not teach a specific amplification range for the optical amplifier, it would be obvious to one of ordinary skill in the art at the time of invention to increase the magnitude of the radiation by at least 20 dB.

As to claims 6 and 21, while Holzapfel does not teach measuring or calibrating spectral data or a spectrometer, it would have been obvious to one of ordinary skill in the art at the time of invention that this interferometric setup could be used in calibration for many types of interferometers including spectrometric ones.

As to claims 7 and 17, Holzapfel teaches measuring the amount of movement of a reflective surface (2). It would have been obvious to one of ordinary skill in the art at the time of

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invention to replace this surface with a controllable, movable mirror to control the path length change.

As to claims 11-13, while Holzapfel teaches a mode-locked ultrafast laser, it would have been obvious to one of ordinary skill in the art that the interferometric apparatus would work with various light sources, including a distributed feedback laser diode and a gas discharge lamp.

As to claims 14 and 15, while Holzapfel does not teach a specific optical amplifier, erbium doped fiber amplifiers and semiconductor optical amplifiers are well known in the art and it would have been obvious to one of ordinary skill in the art at the time of invention to choose from any number of well known optical amplifiers including the aforementioned.

As to claim 19, while Holzapfel does not teach a phase locked loop in the processor, they are well known in the art and further it would have been obvious to one of ordinary skill in the art at the time of invention to include on in the apparatus of Holzapfel.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J Connolly whose telephone number is 703.305.4397.

The examiner can normally be reached on 9 am-5.30 pm ... Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 703.308.4881. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0956.

pjcl^u



Frank G. Font
Supervisory Patent Examiner
Technology Center 2800